Sidebands

The Newsletter of the EAST GREENBUSH AMATEUR RADIO ASSOCIATION

www.egara.club

May 2021

President Emeritus - Tom Scorsone, KC2FCP President - Bryan Jackson, W2RBJ Vice-President - Nick Field, KD2JCR
Secretary - Steve VanSickle, WB2HPR Treasurer, Don Mayotte, KB2CDX
Board Members: David Jaegar, Jr., K2DEJ Russ Greenman, WB2LXC Dave Gillette, KC2RPU

Hamfest 2021 - A New Date & Place

Hamfest 2021 will be bigger and better than ever -- located in a brand new facility and held a week earlier than planned. The new date is Saturday, August 21st and will be held at the "Red Barn" at the East Greenbush Town Park.

The facility not only offers a beautiful setting, but also a fully enclosed, air conditioned building and ample parking. In addition, there are covered exterior spaces and a covered pavilion.

Club officials agreed to reserve the space after the East Greenbush Fire Department decided its facilities would not be available this year.

Hamfest 2021 will move to the East Greenbush Town Park's "Red Barn". The building was built in 2019 and offers exceptional facilities.

"The park location and its facilities are exceptional and is sure to make a favorable impression on attendees and vendors alike," said club President Bryan Jackson, W2RBJ. "And, regardless of weather, our event will have plenty of covered space, including a large interior space with air conditioning, and adjacent outdoor covered space, including a covered pavilion. And, it's a beautiful spot"

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Anonymous Donor Gives EGARA Hats to New Hams

An anonymous donor has purchased five EGARA hats to be given to new hams who pass their Technician test during a VE session held by the club. The donation was made during the club's April membership meeting.

"This generous gift will hopefully encourage the new hams that we license to join EGARA," said Club President Bryan Jackson, W2RBJ. "Gestures such as this make our club truly unique and special."

During past VE exam sessions, the club has given away brand new dual band mobile transceivers to newly licensed Techs, purchasing them with the proceeds from the sale of ham equipment donated to the club. Because EGARA is now a 501(c)3 organization, all donations it receives are tax deductible.

Next Membership Meeting - May 12, 2021 - Masonic Lodge at 7 pm

Hamfest 2021...

The park includes a covered pavilion

As an added bonus, the facilities are located on the shores of a forested small lake.

East Greenbush Parks and Recreation officials jumped in to help the club when it found itself in need of a new venue. For instance, park facilities are usually not open until 8 am, but they have agreed to let EGARA set up Friday afternoon and access the building at 5:30 a.m. to get set up.

As the club prepares for its annual Hamfest, it already has some $3,500 in prizes on hand for giveaways. But it looks forward to increasing that total as additional sponsors are solicited. Prizes include an HF/6 meter transceiver, DMR HT radios, gift certificates, Amateur Radio publications, and a variety of ham shack accessories. Fortunately, key vendors such as KJI Electronics are also available to attend on the new date. Wouxun will be a major sponsor and has already provided the club with an impressive array of its products.

The club also plans an aggressive marketing campaign to boost attendance. A key component will be periodic email blasts targeted to past Hamfest attendees.

"We'll need 'all hands on deck' this year to make Hamfest 2021 a success, said Vice President Nick Field, KD2JCR. "We're grateful that several members have already signed up for the various jobs that will need to be done. We estimate it will take a minimum of 20 to 25 members to make everything work according to plan -- so we'll be looking for full participation."

"We work hard to make each Hamfest better -- and this year's will be no exception," said Club Secretary Steve VanSickle, WB2HPR. "We begin by reviewing the extensive notes that we take each year that highlight areas that we think can be improved. Then we put together a plan to address any issues we find. It's our biggest event of the year and regarded as one of the best in the region. And, we want to keep it that way."

Please Support Our EGARA 2021 Hamfest Sponsors

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Amateur Radio Software.

Field Day 2021 -- What's the Plan?

Field Day is June 26-27 and EGARA members will need to finalize the club's plan during the May membership meeting.

Because of the pandemic, ARRL will once again allow the special rules it put in place last year, with a notable exception:

• Class D stations may work all other Field Day stations, including other Class D stations, for points. However, this year Class D and Class E stations will be limited to 150 W PEP output. Last year, no such limit was imposed on these stations.

Under the revised rules, an aggregate club score will be published — just as it was done last year. The aggregate score will be a sum of all individual entries that attributed their score to that of a specific club.

EGARA members are being asked to decide if the club should operate a Class A station -- or stations -- at the Masonic Lodge, as it has done in years prior to the pandemic. This would allow the club to potentially gain additional points by operating in a public location. In addition, extra points may be gained for such things as being able to get media coverage and visits by government officials.

Options this year include operating Field Day as a hybrid, with club members working both a club station and their own home station -- or operating only out of their home shacks.

"Field Day really isn't about the point total, but getting our members on the air," said EGARA President Bryan Jackson, W2RBJ. "Operating a Class A station at the Lodge can give members with only a Tech license the chance to work the HF bands in tandem with a member who holds a General or Extra class ticket. However, club members need to decide if it can be done safely and under the current pandemic health guidelines."

Field Day 2019 was the last to operate from the Masonic Lodge, using two Class A stations.

Those safety practices include how best to properly sanitize station equipment used by different operators during Field Day operations.

Last year the club opted not to set up a station at the Masonic lodge hall, with members operating only their home stations. This year's Field Day presents the possibility to once again operate from the location because many members have now received their Covid vaccinations and recommended health precautions have been developed.

Still, members will need to decide at the May meeting what the risks and benefits are -- and how best to proceed with Field Day 2021.

EGARA Club Election Results

The April membership meeting saw the annual election of officers and board members. All of the incumbent officers ran unopposed and were re-elected by acclamation. Each will serve a one year term. They are:

- President: Bryan Jackson, W2RBJ
- Vice President: Nick Field, KD2JCR
- Secretary: Steve Vansickle, WB2HPR
- Treasurer: Don Mayotte, KB2CDX

Also re-elected were all of the incumbent board members:

- Russ Greenman, WB2LXC;
- David Jaegar, Jr., K2DEJ;
- Dave Gillette, KC2RPU

In order to allow for one board position to be open each year, the three board positions had their terms staggered for this election and were determined by the total number of votes received. Russ Greenman received the most votes and will serve a three year term. Dave Jaeger, Jr. received the second largest number of votes and will serve a two year term. Dave Gillette will serve a one year term. Board members will return to full three year terms when they are elected in subsequent elections.

EGARA Ranks Continue to Grow!

Two new members have joined the EGARA ranks -- Harry Olson and Keith Viglucci, KD2EVC.

Harry is currently studying for his Tech license. His membership was sponsored by Dave Smith, WA2WAP.

Keith is an Albany resident and holds a General Class ticket.

Welcome Aboard!

Still Need to Pay Your 2021 Club Dues? It's Never Been Easier!

Take a moment right now to support EGARA by sending along your annual dues for 2021.

Pay quickly and easily online at: *https://www.egara.club/pay-dues*

or mail your check to: EGARA, P.O. Box 25, East Greenbush, NY 12061.

$15 / individual - $25 / family
Multi-year rates also available. Check the website for details.

On the Beam
News & Notes

Updated Radio Frequency Exposure Rules Become Effective on May 3

The FCC has announced that rule changes detailed in a lengthy 2019 Report and Order (R&O) governing RF exposure standards go into effect on May 3, 2021. The new rules do not change existing RF exposure (RFE) limits but do require that stations in all services, including amateur radio, be evaluated against existing limits, unless they are exempted. For stations already in place, that evaluation must be completed by May 3, 2023. After May 3 of this year, any new station, or any existing station modified in a way that's likely to change its RFE profile -- such as different antennas or placement, or greater power -- will need to conduct an evaluation by the date of activation or change.

The Commission anticipated that few operators would have to conduct reevaluations under the new rules and that such evaluations will be relatively straightforward. Nevertheless the FCC adopted a 2-year period for parties to verify and ensure compliance.

The Amateur Service is no longer categorically excluded from certain aspects of the rules, and licensees can no longer avoid doing an exposure assessment simply because they are transmitting below a given power level.

For most amateurs, the major difference is the removal of the categorical exclusion for amateur radio, which means that ham station owners must determine if they either qualify for an exemption or must perform a routine evaluation. Ham stations previously excluded from performing evaluations will have until May 3, 2023, to perform these. After May 3, 2021, any new stations or those modified in a way that affects RF exposure must comply before being put into service.

ARRL Hudson Division Director Ria Jairjam, N2RJ, has produced a YouTube video to help explain the new rules regarding RF exposure.

It's available for viewing at: www.youtube.com/watch?v=kyLDC-H8kb0

The December 2019 RF R&O changes the methods that many radio services use to determine and achieve compliance with FCC limits on human exposure to RF electromagnetic fields. The FCC also modified the process for determining whether a particular device or deployment is exempt from a more thorough analysis by replacing a service-specific list of transmitters, facilities, and operations for which evaluation is required with new streamlined formula-based criteria. The R&O also addressed how to perform evaluations where the exemption does not apply, and how to mitigate exposure. Amateur radio licensees will have to determine whether any existing facilities previously excluded under the old rules now qualify for an exemption under the new rules. Most will, but some may not.

For amateurs, the major difference is the removal of the categorical exclusion, which means that every ham will be required to perform some sort of calculation, either to determine if they qualify for an exemption. Otherwise, they must perform a full-fledged exposure assessment. For hams who previously performed exposure assessments on their stations, there is nothing more to do.

The ARRL Lab staff is available to help amateurs to make these determinations and, if needed, perform the necessary calculations to ensure their stations comply. ARRL Laboratory Manager Ed Hare, W1RFI, who helped prepare ARRL's RF Exposure and You book, explained it this way. "The FCC did not change any of the underlying rules applicable to amateur station evaluations," he said. "The sections of the book on how to perform routine station evaluations are still valid and usable, especially the many charts of common antennas at different heights." Hare said ARRL Lab staff also would be available to help amateurs understand the rules and evaluate their stations.

RF Exposure and You is available for free download from ARRL at ***http://www.arrl.org/files/file/Technology/RFsafetyCommittee/28RFSafety.pdf.*** The ARRL RF Safety Committee is working with the FCC to update the FCC's aids for following human exposure rules. In addition, ARRL is developing tools that all hams can use to perform exposure assessments.

EGARA April Meeting Minutes

- The April meeting of the EGARA was called to order at 7:00. There were 21 members in attendance at the Masonic Temple. It was the first in-person EGARA meeting since the Covid-19 pandemic began last year;
- President Bryan Jackson, W2RBJ welcomed everyone, followed by a round-robin introduction. It is with regret that Fred Carrol, AJ4CN will be leaving the capital region to relocate to North Carolina. He will be greatly missed;
- A quorum was present, and the annual election was conducted. The slate of officers was unchallenged. A motion was made by Chris Link, N2NEH and a single vote was cast for the incumbent candidates by the Secretary with approval by the membership. Incumbents re-elected are: President – Bryan Jackson, W2RBJ; Vice President—Nick Field,KD2JCR; Treasurer: Don Mayotte, KB2CDX; Secretary: Steve VanSickle, WB2HPR;
- A proposed change to the Board of Directors elections was mentioned. An update of the by-laws is being planned;
- A call was made for volunteers for the Hamfest and several members signed up for jobs. It is now slated to be held August 21st on the grounds of the East Greenbush Town Park. Monthly email blasts are being planned to the club's mailing list to promote the Hamfest.
- Dues were collected. In addition, nine EGARA hats were sold. Donations made to EGARA are now tax deductible since the club is a 501 C 3 organization, as designated by the IRS. Three donations have been received to date;
- ECHOLINK is back up and running on the 147.270, KC2FCP machine. This allows all of our members access to EGARA nets. Also, Chris Link, N2NEH has re-established his UHF link on 446.150 to allow communication with Margaretteville in France. Contact Chris for more information.
- Lawn maintenance at the Lodge will commence soon and volunteers are needed.
- Items for sale, purchase or trade in Sidebands, the club newsletter, should be submitted to Bryan Jackson.
- Following the business meeting, Don Mayotte, KB2CDX gave a power point presentation about Raspberry Pi. He showed many versions of the hardware, software, and applications – allowing its use with APRS, digital modes, ADS-B flight tracking, remote SDR, WSPR, satellite tracking, DV hotspot, Retro-Pi (games), and OSMC media center. There was a live demonstration of the DV hotspot using the Parrot mode. Dave Smith, WA2WAP showed everyone a portable self contained work station which uses the Raspberry Pi.
- The meeting was adjourned at 8:22 PM.
- Submitted by Steve VanSickle, WB2HPR - Secretary

If It's Springtime... It's Lodge Maintenance Time

The nice weather brings with it the club's responsibility to maintain the grounds at the Masonic Lodge where the club holds its monthly meetings and special events, such as Field Day. The first regular grounds maintenance began April 24th with lawn mowing, debris clean-up and weed control.

Club members normally cut the grass every two weeks, although sometimes more often if conditions dictate. EGARA also checks and cleans the interior of the building on a monthly basis as needed. Duties include vacuuming, washing floors and restocking the building;'s rest rooms.

All club members are urged to help out and an email message is usually sent out a few days prior to the scheduled maintenance day. In return for maintaining the building, the Masonic Lodge provides meeting space and storage for the club's equipment.

Don Mayotte sprays weed killer during grounds maintenance at the Masonic Lodge

Securing PowerPole Connectors

By Dan Romanchik, KB6NU

In preparation for Field Day, I made a bunch of cables with PowerPole connectors to connect the solar panel, charge controller and batteries that I used. If you're not familiar with PowerPoles, you might want to check out this YouTube video (***https://www.youtube.com/watch?v=o31iuOcQ-jo***). They're really great connectors, and have become the DC connector of choice for many hams.

When I make up PowerPole cables, I normally don't bother trying to secure the two halves together, especially if you're using some decently heavy gauge wire. They fit together pretty tightly, and don't come apart easily. Even so, I think securing them together is a good idea. You can buy a little roll pin to insert between the red and black housings that is supposed to prevent them from coming apart, but many folks complain that the pin has a tendency to fall out. This not only defeats the purpose, but could also damage your equipment.

Securing them is the right thing to do, though, and I recently came across some great suggestions on how to do this in the daily digest that I receive from the Elecraft-KX mailing list (***https://groups.io/g/Elecraft-KX***). Here are the best tips from the thread, Securing Anderson Power Poles (***https://groups.io/g/Elecraft-KX/topic/75060413***):

- Rudy K8SWD: You can thermally bond the red and black housings with a soldering iron like you are making little welds on both sides. Permanent (mostly) but it works better than the roll pins. Just clean the tip really good before soldering!

- Dave K0CDA: [Anderson] also make connectors that are thermally bonded together in pairs. They do NOT come apart.

- Don W3FPR: I use a drop of Super Glue on the junction of the plastic pieces. Warning – that glue grabs quickly, so slide the 2 pieces onlyl enough to start the assembly, then apply the drop of glue and quickly finish sliding them together. I have never had ones prepared like that come apart, and I don't use roll pins. I will say one more thing – use only the genuine APPs. I have seen some knockoffs that do not mate well.

- Greg KC9NRO: Take a hot soldering iron. Wipe the tip with sponge. Run the tip down both side of APP bonding the black and red sides together. Clean soldering iron tip and apply some solder to tip. That's how I roll. Never comes apart

- Mike AI4NS: PVC cement will soften the plastic enough to bond them together. You can also get plastic welding rods, such as Daindy Plastic Welding Rods (***https://www.amazon.com/dp/B086HNQXM3/ref=cm_sw_r_cp_api_i_poR8Eb88N54P4***). Chuck a rod in a Dremel and weld them together. I have made plastic boxes and panels using this method.

- Jack WD4E: Snip the cotton end off a Q-tip, cutting at an angle. Insert into hole made for roll pin, cut off excess, save remainder of Q-tip for next requirement.

- Troy K4JDA: 2.5mm screws work well, stay in, and are easily removable.

I posted these suggestions to my blog (***https://KB6NU.com***) and got a few more great suggestions:

- Tom KB8UUZ: Fat tooth picks also work great. Jam it in, break it off.

- Bruce N0NHP: I use MEK (Methyl Ethyl Ketone) replacement to clean my circuit boards after soldering. A single drop of MEK on the junction between the two halves of the PowerPole shell will fuse them. It can be broken with a sharp tap but not accidentally. It will set and dry in seconds and should be applied after the shell pieces are put together.

I think these are all great suggestions. I think that I'm going to try the cotton swab method. While reading them, another thought occurred to me. I haven't tried this yet, but I'm thinking a little drop of hot glue on the roll-pin hole might work, too.

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Dan Romanchik, KB6NU, is the author of the KB6NU amateur radio blog (KB6NU.Com), and the "No Nonsense" amateur radio license study guides (KB6NU.Com/study-guides/).

The History of Ham Radio: What is an Amateur?

Chris Codella, W2PA, author, John Pelham, W1JA, editor, Phil Johnson, W2SQ, editor

(Editor's note: By special arrangement with the authors, Sidebands is pleased to present this multi-part series on the history of ham radio. Subsequent chapters will be published in future monthly editions of the newsletter)

As the number of phone broadcasts exploded in late 1921, radio amateurs and the ARRL were ambivalent about it. On one hand, the great increase in the number of people owning receivers was a good thing—radio technology was being embraced by the general public. On the other hand, the shared airwaves were getting even more crowded. There were now thousands of broadcast stations operating, both commercial and amateur. Furthermore, a fuzzy line separated amateur from non-amateur that had nothing to do with commercial interest.

The days when owning a wireless receiver made you a hobbyist were coming to an end as the people slowly began to appreciate radio for its message, not just its medium. Operating a transmitter, on the other hand, made you more than a mere listener. And if you transmitted not for two-way communication but to no one in particular, never listening for a reply, you were also a broadcaster.

In December, QST began a new department called With the Radiophone Folks to present on-air schedules of "the better class of broadcasting stations" for the growing group of those interested primarily in receiving them. ARRL secretary Kenneth Warner's editorial asked whether phone was a "wonderful thing" or "infernal nuisance," concluding that it was basically wonderful and "…we look forward to that day when every home will have its radio installation – when powerful central stations will broadcast news, concerts, lectures, entertainments, and everyone may get them without stirring from his living room." Although there were some good quality amateur broadcasts, it was the "amateur concert fiends" who were a problem, he wrote. They were determined to transmit in spite of "the awfulness of the modulation, the ungodly supply ripple, the travesty on music which his alleged phonograph grinds out."

In an effort to bring some order to the environment, the Commerce Department amended its regulations in January to require a limited commercial license for all broadcasting stations, and forbid amateurs from broadcasting altogether. (Transmitting, of course, was still fine.) With broadcasters limited to 360 meters (485 meters for crop and weather information), there should not be an interference problem with amateurs down at 200. But it was not quite so simple. Some amateurs continued to stray above 200 meters. And many of the receivers being sold to the public were inefficient and unselective, yet quite expensive. When people who were not amateurs had their listening pleasure interrupted by interference from telegraphy stations, it was naturally the amateurs who they blamed and complained about, not their expensive new receivers. Much of the time it was not amateurs they were hearing at all, but commercial telegraph stations.

Phone had proved unsuitable for relay work and would never really be useful for it, reasoned Warner, since the range was so much greater if a phone set were used on CW. Still, it increasingly drew enthusiasts among the amateurs, for other technical and operational reasons. QST Technical Editor Robert S. Kruse, who in an article about QRM the previous summer had written that "the telephone is inherently broad tuning, and for that reason, to me an obnoxious perversion of the CW set," now appealed for cooperation. Despite the success of the Chicago Plan and cooperative operating in general, a tension was developing between phone operators and code operators – similar to the tension between those involved in local and DX operation, and those using spark and CW. The phone enthusiast sometimes saw the code operator as an "ignorant brass-pounder" without technical ability, and the code expert viewed the fone operator as "a 'ham,' 'punk,' or 'lid'" who "often violates the recognized courtesies of the ether," reported Kruse. He believed the two camps had much to learn from each other and they should talk, get a mutual understanding, and work together to establish reasonable "time division" on the air, as amateurs had always done in the past.

Kruse criticized the tone (meaning the quality of modulation) of the majority of phone transmitters and cited only two that he considered any good: KDKA (formerly 8XK) and 3NR. (There was not yet much of a distinction between commercial and amateur where broadcasting was concerned, despite the additional license requirement.) Amusingly, he also complained that phone stations would often continue to send out a signal even during periods when no talking was going on or music was being played "while the phonograph is being wound."

On the positive side, a high percentage of a phone station's "hearers are interested listeners," he wrote. By this Kruse meant that while a code station's transmissions were normally meant for one recipient, a phone broadcast was meant for many. But he also drew a distinction between what he called "a conversation fone" and "a broadcast fone" in this regard.

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The History of Amateur Radio...

He would not be surprised if "KDKA's audiences are larger than those of NAA," the Navy's time and weather station. Westinghouse was probably not surprised either, selling receivers as fast as they could make them.

Crowded airwaves, broad tuning, wide signals, time sharing—all of it cried out for a different way of thinking about radio. Yet, almost everyone still considered up the only rational direction to go in wavelength (despite getting ever closer to zero in frequency). Amidst all the debate there were a few voices among the amateurs—the ones condemned to life in the "worthless" wasteland below 200 meters—who began to think in the other direction. Dakota Division Manager Boyd Phelps, 9ZT, reminded QST readers that an infinite number of wavelengths existed below 200 meters, largely ignored by amateurs, and offered some technical guidelines on how one might get there, including using antennas at their harmonic wavelengths. The tuning, as he correctly pointed out, was much sharper at lower wavelengths, offering a promise of greatly reduced QRM.

Until amateurs got down there, cooperation continued to be the only way to avoid on-air confrontation and the threat of further restrictive regulation. The ARRL created a publicity department to get information about amateur radio out to the public, an easy task in a day when radio itself was one of the biggest news stories. Listeners were also invited to attend affiliated club meetings both to learn and to complain about interference. In some areas of the country amateurs even adopted volunteer quiet periods in the evening during broadcast hours. While it all seemed to be working for the moment, it was increasingly clear that the 1912 radio law was in need of major revision.

The Secretary of Commerce was to appoint a committee to "devise a new code of radio laws particularly to take into account the new situation brought about by the advent of the phone," according to QST. ARRL fully expected to participate in this, and in a lengthy, five-page editorial, Warner solicited views and comments from individual amateurs and clubs. The two most prominent issues were "regulation of amateur broadcasts and the interference problem between amateur transmission and commercial broadcast reception," he wrote.

Since the assigning of two wavelengths, 360 and 485 meters, to commercial broadcasts, all amateur phone broadcasts had been prohibited (temporarily, according to Warner) by the January amendment to the regulations. While corporations had an interest in regulating amateurs, the primary reason for the prohibition was to protect the radio telegraph operators "whom the department recognizes as the great national asset… being swamped by the amateur phones." With the tremendous growth in broadcasting, there also was a need to regulate the quality of signals and types of broadcasts, taking into account the interests of the general public.

Local amateur phone conversation was not the problem; it was the broadcasts that interfered with the large number of telegraph stations on 200 meters. Nevertheless, the Commerce Department was "our friend," wrote Warner, and hams must work to enable amateur broadcasts "where such service is desirable"—perhaps on some other wavelength such as 175 or 225 meters.

Another suggestion was a graded licensing system that would restrict, for example, first year stations to operating below 175 meters, phones on 200, spark on 225, and CW on 275 (edging upwards again, the natural direction for the most DX-worthy mode). In the various band segmentation proposals the common scheme was to have phone transmissions on shorter wavelengths and CW on the longer end – setting a pattern for many band plans yet to come.

Warner appealed for calm consideration of all possibilities. Everyone assumed amateur broadcasting would return.

Another difficulty was the accelerating development of commercial broadcasting. Corporations did it all: they built large broadcasting stations, arranged for programming, advertised their service, and sold receivers. This had created a huge change during just the past year. Receiver manufacturers could not keep up with the demand and, in the biggest change from what had existed before, "the broadcasting companies are making 'big business' out of what was the game of us amateurs for so many years," complained Warner, adding, "it's Mr. Novice who is doing the buying," referring to members of the listening public. These buyers did not really care about radio itself, he wrote, only about having something they could listen to. More than novices, however, many were also people in prominent roles in society—government officials, corporate officers, doctors, educators. When people like that heard signals that confused them and interfered with what they wanted to hear, it became a problem for amateurs because they were the ones who normally got blamed – even for static.

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Believing that concerts, news and other broadcast content was all there was to radio, typical listeners had no knowledge of other services including amateur radio, and were completely unaware of the various constraints on spectrum use. Prominent people who were part of the radio boom could, as a result, end up causing or promoting overregulation.

Finally, there was the reality that amateur wavelengths were just too close to commercial broadcast wavelengths. One proposal, objected to by various interests, was to raise the broadcasters up to 1000 to 1800 meters which, it claimed, was largely unused space reserved by the Navy. There was no room for expansion lower with all the broadcasters on 360 meters.

Another, somewhat naïve, suggestion was to do what amateurs had always done—embrace newcomers, invite them to club meetings, show them what hams do. The fatal flaw in this suggestion lay in the fact, acknowledged earlier, that the newcomers really had no interest in radio itself, the way amateurs did. It was the difference between a practitioner and a user, the medium and the message.

In an example of the regulatory threat, the ARRL was asked (by whom was not identified) what hams would think of a proposal to ban amateur operation between 8:00 and 11:00 PM. The rationale was that since the ARRL was primarily interested in "distance work" which is not really possible until late at night anyway, this limitation should be acceptable. Moreover, some amateurs, who were also broadcast listeners, seemed ready to support such a measure.

Warner's long editorial concluded that the preference of each local area majority should decide how to handle spectrum conflicts, again relying on all radio users to know each other and agree to cooperate—something that had worked well in the past. While appreciating the threat, the editors and the League did not yet seem to grasp the magnitude of the radio boom, having only witnessed the beginning thus far. Still, they feared that in an either/or fight, the broadcast listener might get everything.

Listeners were rapidly outnumbering amateurs and there was no end in sight. Ironically, amateurs now faced a similar problem with broadcast listeners that commercial and government stations had faced in the early days with amateurs, who had far outnumbered them.

The ARRL called on clubs to immediately organize local meetings that would include everyone—hams and listeners alike—to talk over the issues. Then they should try to come to an understanding. Whether it would be quiet hours or not, it should be decided by majority agreement.

"We must make up our minds that … the old days of free-for-all amateur radio have gone for good. The day will never return when we can make all the noise we want at any old time of the day or night," he noted.

Even in the glow of the transatlantic test triumph, he did not yet see the new radio landscape yet to be discovered.

Commerce Secretary Herbert Hoover announced in January 1922 that a new Department of Commerce Cup (later to be referred to as the Hoover Cup) would be awarded annually (for work during a calendar year) under the auspices of the ARRL to "America's Best All-Around Amateur Station, the major portion of which is home-made," satisfying nine criteria, and adhering to a list of regulations. Entries for 1921 would be due by March 1.

Besides the excitement over such an offer by the government, QST expressed pride that the award had been offered to ARRL for administration, and Warner noticed two things about it that he thought were especially "pleasant." Hoover himself was an engineer and so were amateurs, in a sense—radio demands innovation. Secondly, the secretary had been in control of amateur radio, and under the department's guidance it had grown, making possible its contributions to the nation and the war effort.

On a unanimous vote of the ARRL board, the first Hoover Cup went to Louis Falconi, 5ZA, of Roswell, New Mexico. July QST carried a nearly six-page description of his home built station, written by the winner.

Department of Commerce - Office of the Secretary
Washington
August 2, 1922

Mr. Louis Falconi
Roswell, New. Mexico,

Dear Mr. Falconi:

The Board of Directors of the American Radio Relay League by unanimous vote have decided that you are entitled to the Department of Commerce cup for 1921 in recognition of the notable efficiency of your radio station and your activity in amateur radio work.

It gives me very great pleasure, therefore, to present you with the cup herewith. I also desire to express my hearty congratulations on the success of your work.

Yours faithfully,
(signed) Herbert Hoover

The Best Coax to Use

By Steve VanSickle, WB2HPR

The other day, a fellow ham asked for my recommendation as to which type of coaxial cable was the best to use. I told him – most any coax is suitable – as long as you know the characteristics of the cable and the application requirements.

Turns out, he was interested in connecting his new dual-band vertical at his home station. He anticipated mounting the antenna on a modest mast, up about 15 feet above the house gable, with the route of the coax to his home station to be approximately 45 feet.

He asked if his old scanner antenna coax would be suitable (a reclaimed length of RG-58/u) – and I told him "no" – this smaller diameter would gobble up too much of his transmitter signal on its way to the sky. New RG-58/u has a specified loss of around 3.8 dB per 100 feet, and given the condition and age of the old scanner coax, would likely result in a loss of around 50 % of his transmit signal, factoring in the connector losses. Also, that old coax was likely contaminated, since it began life as a bargain basement no-name variety and had been subjected to many years of outdoor exposure. It may well have poor shielding as well, resulting in extra noise on his receive signal. Not a good choice for this application.

In the end, this ham opted to wisely spend a few extra dollars to get the best cable for his application – choosing to go with a 50 foot roll of RG-214, resulting in better shielding, as well as half the loss (1.9 dB/100 ft.). Being new, and a reputable brand, this coax is destined to last for a very long time and give many years of trouble-free service.

He could have opted for larger, more expensive "hard line" – that is coaxial cable with even less loss (.8 dB/100 ft.) - but at a cost that would be hard to justify in this installation. You have to make a cost/benefit analysis (and check your project budget) to determine which coax choice is correct for each application. In other words, what's the best bang for the buck.

This example illustrates why you have to look at the big picture when you choose which coax to use with your antenna. You must consider the overall length, the frequency, the power handling requirements, installation requirements, and exposure to the elements. In addition, factor in your tolerance to power loss and receive signal degradation. Specifications for most types of coaxial cable are readily available – either through Internet resources or in many written publications – such as the ARRL Antenna Handbook. Also, you can seek the opinion of your Elmer or fellow ham (mentor) to get their advice.

Take the time to factor in all of these variables when planning an antenna installation and you'll be glad that you "thought it through" before you get out that soldering iron and step ladder! This way you will end up with the best coax to use and the performance you expect from your gear. See the chart below for a comparison of coax loss.

Coax Loss Chart dB per 100 Feet

	RG-316	RG-58	RG-8X	LMR-240	RG-213	9913	LMR-400	Bury-Flex
3.5 MHz	1.5	.8	.65	.45	.3	.23	.2	.26
7 MHz	2.1	1.2	.85	.64	.5	.32	.3	.37
14 MHz	3.0	1.7	1.21	.91	.7	.46	.5	.53
28 MHz	4.2	2.4	1.74	1.29	1.00	.65	.7	.75
50 MHz	5.6	3.2	2.36	1.73	1.40	.88	.9	1.00
144 MHz	9.6	5.5	4.20	2.95	2.40	1.54	1.44	1.73
440 MHz	17	9.9	7.92	5.23	4.40	2.818	2.7	3.08
2400	41.4	24.8	22.80	12.65	12	7.48	6.6	7.63

FCC Pushes Warnings About "Illegal Activities"

The FCC is warning that anyone found guilty of illegal radio operation -- including Amateurs -- may lose the right to hold any FCC license. Faced with reduced resources, the Commission is hoping the threat of stiff penalties will aid it in stopping radio pirates and licensed operators who violate the rules.

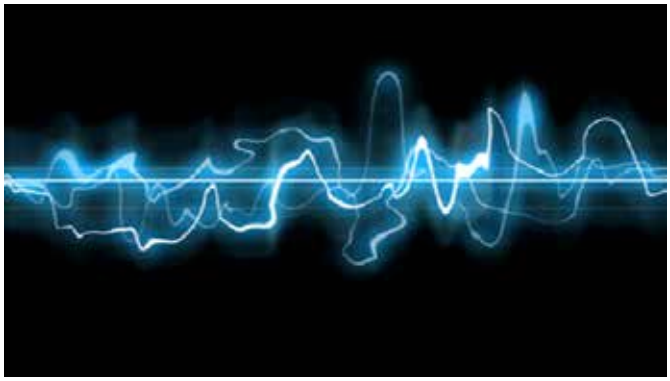
Commission specifically cautioned that individuals found to have used radios in connection with any illegal activity are "subject to severe penalties, including significant fines, seizure of the offending equipment, and in some cases, criminal prosecution."

The FCC also that highlighted that illegal operation in any service or band, including completely outside the Amateur allocations, could potentially disqualify a person from holding any FCC license in any service, not just the Amateur Service. It is urging Amateurs who know of illegal or criminal activity to report it to their local law enforcement office or the FBI.

A Ham Radio Tip...

Getting RFI Out of Your Audio Chain

By Bob Heil, Heil Audio



Many amateur radio stations today are experiencing terrific RFI (Radio Frequency Interference) that is impeding their audio signals and causing very garbled and distorted audio. Careful listening indicates that MANY SSB signals on the air today exhibit RFI – sometimes not enough for the other stations to notice (because they are listening on a 3 inch speaker in their transceiver), but careful listening in a wideband receiver with VERY high quality receiving equalizers and studio monitor speakers allows this slight interference to become VERY annoying. And, of course, there are also signals on the bands that have terrible problems with RF getting into their audio lines, causing all sorts of problems.

1. Shielding of the Mic Connector

We, here in the Heil Sound lab, have discovered a very interesting fact. Most of the major transceivers today do NOT ground their microphone shields! That's correct – the mic connector shields FLOAT! Now wasn't this one of the FIRST things we learned about building RF transmitters with speech audio sections? GROUND those shields!! So, we came up with a very simple fix that just about anyone can make to their rig. You don't have to get inside the radio, so you don't void any warranties. The fix is simple and effective.

This applies to the 4 and 8 pin Foster microphone connectors so common on today's rigs. (that's the Japanese company that builds those dang little mic connectors!!)

First, unplug your Heil (what – you don't have one yet??) microphone cable from the front panel of the transceiver. Do this first, because you don't want the mic plug connected to the sensitive circuitry inside the radio while you're soldering.

Remove the two small #4 Phillips head screws and the cable clamp they hold. Then remove the tiny Phillips head screw that holds the rest of the metal sleeve. Slide that back onto the mic cable. Now, cut off the end of a resistor, or get a piece of #20 solid, tinned wire about 3 inch long. Locate the mic pin that has the shield of the mic cable soldered to it.

With a small iron, carefully solder this solid wire to that shield and pin. Bring the sleeve back up the cable and attach to the connector with the small screw. This leaves the solid wire coming out the back of the connector. Replace the cable clamp, and (as you do that), tightly wrap that solid wire around one of the #4 Phillips head screws and tighten the clamp assembly very well.

What you have accomplished is grounded the shield to the transceivers chassis ground through the ring on the mic connector. (Make sure that ring is tight). This has been a big help to many stations with RFI problems and should help you clean up your signal.

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Getting RFI Out of Audio...

2. Eliminating Common-Mode Current from Shields

Common-mode current can be a serious problem in amateur radio stations. This current, which can start flowing due to mutual coupling between an antenna and your coax, frequency-sensitive problems in your station ground, or a floating ground in your rig's power supply, can create any number of headaches, including RFI on your microphone line. In a nutshell, "ground" can "rise above ground" on some frequencies.

Several remedies are available.

A simple one is to wind a coil in your coaxial cable, about 8 or 10 turns of about 6 inch diameter, as close to the rig as possible. Hold the turns in place with black tape. This forms an RF choke like the one often used at the feed point of a dipole, Yagi, or Quad, and for the same reason. This choke can break up the current flow, and may have miraculous results (both in terms of effectiveness and simplicity!).

Another tactic is to slip snap-on ferrite cores onto the microphone line. On an AD-1 boom set adapter cable, snap one core onto the PTT line, another onto the microphone line, and another over the combined cable. If you are hearing RFI in your headphones, slip one or more cores onto the headphone line.

Earlier, it was mentioned that your rig's power supply might be involved. Many power supplies, especially switching-mode types, use a floating ground.

A number of Astron® power supplies, which are very popular because of their low cost and excellent performance, use a floating ground. This can cause an amateur transceiver to take off scanning when you transmit or set up common-mode current. The solution is to connect a short strap from the power supply's Black (negative) output terminal to the chassis of the power supply (often there is a convenient ground lug inside the cabinet). Then, connect 0.01 µF and 0.001 µF 50-Volt disc ceramic capacitors from the red (+) to the black (–) output terminals; the capacitors will shunt any RF on the DC line to ground, which now really is ground.

Ferrite cores placed on your microphone cable can often help eliminate RFI in your audio

Please use caution when doing any work inside your power supply, and utilize the services of a qualified electrician if you have any doubts about your capabilities. Heil Sound, Ltd. specifically disclaims any responsibility for personal injury or damage to the equipment caused by improper modification work on station components.

Bob Heil is an American sound and radio engineer most well known for creating the template for modern rock sound systems. He founded the company Heil Sound in 1966, which went on to create unique touring sound systems for bands such as The Grateful Dead and The Who.

Heil has been an innovator in the field of amateur radio, manufacturing microphones and satellite dishes for broadcasters and live sound engineers. Heil has lectured at major electronic conventions and taught classes at various institutions.

Ohm's Law Answers Your Questions

Understanding these concepts will help you solve more than theoretical problems

Understanding electronics and electronic troubleshooting starts with knowing Ohm's Law. It's not difficult and can make your work so much easier. And, even if you think you've got it down pat, a refresher never hurts.

German physicist Georg Ohm published the concept in 1827, almost 200 years ago. It was later recognized as Ohm's Law and has been described as the most important early quantitative description of the physics of electricity.

Fig. 1 is a list of simple formulas for using Ohm's Law. Nothing complicated -- just good answers to your questions. You don't need to be a mathematician to run the calculations. The calculator on your smartphone will handle this easily.

P is for power in watts, I is current in amperes, R is resistance in ohms and E is voltage in volts. Solve for any of those knowing two of the other parameters.

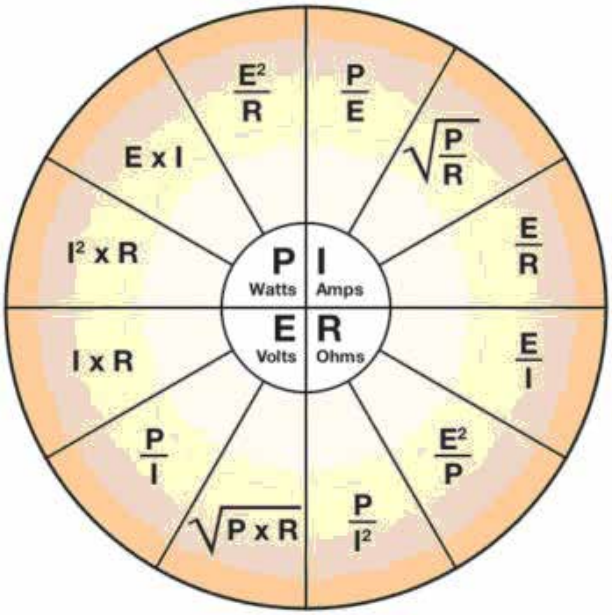

Fig. 1 - The Formulas of Ohm's Law

Ohm's Law on Current

When you look at a 100 watt light bulb, think 120 volts at about 0.8 amperes (0.8333 amperes is more exact). That is 100 watts of power being consumed. So how many lights can be put on a 15 ampere circuit breaker? Let's see — 15 ampere circuit capacity, divided by 0.8333 amperes for each bulb in parallel = 18 lamps. Conversely, it is 18 lamps X 0.8333 amperes per lamp = 14.9994 amperes … right at the limit of the circuit breaker.

The rule here says you don't put more than an 80% load on any circuit breaker for fuse, which is 14 lamps in this case. Always keep some headroom in a circuit. As you know, breakers and fuses are used to protect against fires or other dramatic failures during circuit problems. They get unreliable at their current limit. You don't need nuisance break trips or fuse burn-outs from running too close to the line.

Ohm's Law

Vacuum tube power amplifiers in Amateur gear often have upwards of 2,000 volts running the RF power amplifier tubes. Power supplies like that often have a "bleeder" resistor between the high voltage and ground to bring down or "bleed" the high voltage to zero when the transmitter is turned off. This should happen in only a second or so of time. The power supply could stay hot with high voltage for minutes or even hours if the bleeder resistor fails open. That is a serious safety issue for the person working on it if he or she fails to short the high voltage filter capacitor before touching any part of the transmitter.

In this example, let's use 2,600 volts. Ohm's Law tells us that 2600 volts across the resistor squared (times itself) then divided by 100,000 ohms resistance equals 67.6 watts of power dissipation required on a continuous basis on a 100 watt resistor. You would think that the 32.4% safety margin would be enough. But a resistor in this type of application can typically fail after 10 years of use. The answer is in the ventilation the resistor gets for cooling. The 67.6 watts in heat has to go somewhere – and insufficient air flow will definitely shorten its service life.

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Ohm's Law... A Quick Study

One answer is to replace the 100 watt resistor with a resistor rated at 225 watts.. This gives more surface area so it runs cooler, thus longer. A 100 watt resistor is only a couple of dollars less than a 225 watt unit. But it buys a huge increase in reliability and safety. No big deal.

Next consider what might be in an RF dummy load. Imagine six 312 ohm/200 watt non-inductive resistors. The transmitter will see 52 ohms because the resistors are in parallel. Simple math, 312 ohms divided by 6 resistors = 52 ohms. Yes, 52 ohms, although 51.5 ohms, 70 ohms and other impedances were common in the past -- before solid-state transmitters more or less forced the standard to be 50 ohms. Tube-based transmitters will tune into almost any load while solid-state transmitters are less forgiving and are designed to perform only into 50 ohm loads. Anything else and you'll have VSWR -- although most late model transmitters will automatically their decrease power to avoid damage.

Replacing a resistor (left) with one of the same value but a higher wattage rating (right) can avoid failure due to heating.

Ohm's Law on Voltage

Let's say we know that 2 amperes of current is going into a 100 ohm resistor. What is the voltage across the resistor? The formula is 2 amperes x 100 ohms resistance = 200 volts. From that, we can solve for power in the resistor. It is 200 volts x 2 amperes current = 400 watts.

Ohm's Law on Power

For our next example, let's consider moving up to a full power broadcast transmitter. A Continental 816R-2 FM 20 kW FM transmitter might have 7000 volts on the plate of the PA tube with 3.3 amperes of current drawn. Ohm's Law tell us that 7000 volts x 3.3 amperes = 23,100 watts of power. That is transmitter power input, not output. The power output is subject to the power amplifier efficiency, which is typically 75%. Then, the transmitter power output is 17,325 watts. That also means that 25% of the input power is lost in heat. That is 23,100 watts of input power x .25 = 5775 watts of heat.

Half Power?

Half power doesn't mean the transmitter's PA voltage is half. If it was half, then the PA current would be half and RF output would be one-quarter. Let's use a broadcast transmitter again for this example. At one time Class 4 (now Class C) AM stations ran 1000 watts day and 250 watts at night.

A Gates BC-1 transmitter might have 2600 PA volts and 0.51 amperes of PA current during the day. We can determine the resistance of the power amplifier by taking the PA voltage of 2600 and dividing it by PA current of 0.51 amperes. The answer is 5098 ohms.

That same PA resistance applies regardless of the power level of this transmitter. At quarter-power, the PA voltage is 1300 volts. Ohm's law, using the same 5098 ohms, tells us that the PA current should be 0.255 amperes. Yes, it worked out that way in practice. The simple trick was to connect 120 VAC to the primary of the transmitter's high-voltage transformer for night operation in place of 240 VAC in the day.

With quarter-power, the antenna ammeter read half and the signal field intensity was half, not one-quarter. Let's examine this. If you have a 50 ohm antenna and 1000 watts of power, what is the antenna current? Using Ohm's Law, take 1000 watts divided by 50 ohms = 20. The square root of that is 4.47 amperes. Divide 250 watts by the same 50 ohm antenna resistance and you get 5. The square root of that is 2.236 amperes, half of the day antenna current. It's Ohm's Law.

Think Ohm's Law when you are working on your gear. It answers your questions and makes perfect sense.

Shack of the Month - KB2CDX

Don Mayotte, KB2CDX, gets the job done with a shack that's neat, clean and efficient.

His gear includes a Yaesu FT-891, MFJ 931D tuner, R&L 35 amp power supply, MD-100 desk mike, and an Anytime 878 2m/440.

He uses a Zumspot hotspot for DMR contacts.

Don also recently installed a Hamshack Hotline phone

Let Sidebands Feature Your Shack!

Send photos and a brief description to W2RBJ@outook.com

Archive of Marconi Papers and Correspondence Acquired by California Museum

The Huntington Library, Art Museum, and Botanical Gardens in San Marino, California, has acquired an archive of papers and correspondence to, from, and about wireless pioneer and Nobel laureate Guglielmo Marconi. Among the more than 200 pages of correspondence are 31 letters from Marconi to his chief engineer, Richard Vyvyan, written between 1902 and 1909, regarding the construction and successful implementation of a transatlantic telegraph system. The collection also includes Vyvyan's extensive manuscript overview of wireless technology, "Notes on Long Distance Wireless Telegraphy and the Design and Construction and Working of High Power Wireless Stations," written between 1900 and 1904.

"Marconi transformed the speed and effectiveness of telecommunication through wireless telegraphy," said Daniel Lewis, who is responsible for the Huntington's history of science and technology holdings from 1800 to the present.

Marconi was relentless in his attempts to improve on his radio work, as reflected in this archive. "Working very hard to try and find out what are the somewhat occult causes which make signals good one night and unobtainable the next," he wrote to Vyvyan in 1907. "I believe I have found if not very clearly the cause of the effects noticed."

Vyvyan was largely responsible for the construction and operation of the transmitting station at Poldhu in Cornwall, from where the first-ever transatlantic signal was sent to Newfoundland on December 12, 1901. He was also in charge of the Cape Breton station the following year, when the first signal was sent in the opposite direction, and a regular transatlantic telegraph service was established.

The Huntington collection of telegraph-related holdings is one of the most significant in the US. It began with a 2002 donation of several boxes of correspondence to and from Marconi.

Swiss Listeners Take Up Digital Radio

DAB+ is now the most widely used radio reception method

By Paul Mclane, Radio World

The migration to digital broadcast radio is going swiftly in Switzerland.

OFCOM, the Swiss Federal Office of Communication, says DAB+ is now the most widely used radio reception method in the country, and that only one in eight people say they still tune in exclusively to FM radio.

"In autumn 2020, radio listeners received an average of 73 out of 100 radio minutes per day via digital means. Digital radio usage has thus increased by 24 percentage points over the last five years," it said, citing a report from the Digital Migration working group at the Swiss Broadcasting Corp. GfK Annual Meeting.

"At 41 percent, DAB+ is the most widely used reception mode in all parts of the country and in all age groups. Usage via the other two digital reception channels, Internet radio and digital TV, has remained virtually constant, leveling off at 32 percent, while FM use has fallen by 24 percentage points over the past five years, and now stands at 27 per cent. Only 12 out of 100 people stated that they still listen to FM radio."

Switzerland's radio industry will switch entirely from FM to digital broadcasting via DAB+ in 2022 and 2023.

The SRG will switch off its FM transmitters in August 2022, and private radio stations will do so by January 2023.

Meanwhile, in the U.S., the Federal Communications Commission has given approval for U.S. AM radio stations to turn off their analog signals and switch on all-digital HD Radio if they wish.

CALENDAR

May 12, 2021 - 7 pm - Monthly club meeting - in person at Masonic Lodge. Face masks required. Bring your own refreshments.

May 26, 2021 - 7 pm - EGARA Roundtable on 147.270 repeater

June 26-27 - Field Day - Members to decide operating plans at the May membership meeting.

August 21, 2021 - Hamfest 2021 - At the Red Barn, East Greenbush Town Park

Pro Tip: Troubleshooting

Start with the fastest things.

It is smart to check the things that are easy and fast to check first. For example, if you check power before all the other connections, you can eliminate that option faster than the other way around.

When troubleshooting, use this list:

- Check power. Most commonly, power may be hooked up in the wrong place or there's a blown fuse.
- Check connections. The biggest problem besides power is that something may be hooked wrong. Check all of your connections, however sure you are. For example, you have an LED hooked up backward and you spend three hours on every other connection except that one.
- Check parts. Sometimes parts come damaged (or, more likely, you may have damaged them during installation). A ruined IC or capacitor could very well be the culprit, especially if they were subjected to prolonged high heat during soldering.

Looking for...

- **Rens. Co. Search and Rescue is looking for a 2 meter whip for sale or donation.** Needed for communications truck.

Contact Nick at kd2jcr@gmail.com

For Sale...

- **Hamshack Hotline Phones - Cisco SPA-303.** They are cleaned, factory reset with EGARA members # in directory. Comes with power supply. Just $21.00 each.

Contact Dave at: WA2WAP@VERIZON.NET

- **FREE Steel Shelving:** Four (4) Steel shelves, never used, size approx.. 16 x 36 in. About ¾ in thick. Removed from a new office storage cabinet. Powder coated – black Matte finish. Also – several sheets of pegboard. Can easily be cut for easy transport – in good shape, brown color, unfinished. Use 'em to hand stuff in your workshop or shed. All for FREE!
- **Arrow Model 52-S4** - 4-Element 6 Meter Yagi antenna in good condition. $75.00

For above contact Steve at: svansick@nycap.rr.com

- **Military Watt Meter AN/URM-120** B/U 2 to 1000MHZ Complete and with Carrying Case. In excellentcondition. Never abused or used on the road. Great Shack / Bench Watt Meter. Picture available. PRICE REDUCED $70.00
- **UHF 440 Mhz Fast Scan TV Transceiver** including B&W Camera. PRICE REDUCED $5

For above, contact John at: radiowizz@aol.com

Got stuff to sell, swap, or looking to buy?
List it here for FREE!
Email W2RBJ@outlook.com

The East Greenbush Amateur Radio Association

Organized in 1998, by Bert Bruins, N2FPJ, (SK) and Chris Linck, N2NEH, the East Greenbush Amateur Radio Association, an ARRL affiliate, is committed to providing emergency services, educational programs, and operating resources to amateur radio operators and residents of the Capital Region of New York State. The club station is W2EGB. The club also has several VHF and UHF repeaters open to club members and the public.